



## the *dynamic* offshore engineering company



### DISPOSABLE CAMERA SYSTEM – CASE STUDY

Newfield were planning to run a Dril Quip Subsea Tree complete with an Overtravelable Protective Structure as part of their Grove development.

Aquaterra Energy Ltd were contracted to supply a camera system which would enable real time visual feedback of the structure locating and capturing the wellstub as well as the tree locating over the well and activation of the hydraulic lock.

Location: Southern North Sea

Aquaterra Scope: Design, fabrication, testing, installation and offshore operation of a disposable camera system.

#### PROBLEM:

- Ability to locate well stub and view protective structure capturing it.
- Ability to view tree capturing the well stub.
- Confirmation of structure land out point.
- Confirmation of hydraulic locking mechanism.
- Difficult for small eyeball ROV to stay on location due to currents.
- ROV cannot always access areas in the central sections of the subsea tree i.e. to view locking pin.
- Visibility can be a problem in this location.
- ROV does not always have the ability to stay on location.
- Back up should the ROV fail.

#### SOLUTION:

- Disposable cameras were attached to the tree and structure via specially designed brackets.
- Brackets clamped to the structure and tree positioning cameras within a few feet of the target.
- Targets were:

Camera 1 – positioned beneath the structure and angled down to view capture of well stub

Camera 2 – positioned at 90 degrees to camera one looking straight across the base of the capture cone to confirm land out point and assist with capture.

Camera 3 – positioned beneath the subsea tree to enable viewing of well stub and to confirm land out point.

Camera 4 – positioned to enable a clear and consistent view of the hydraulic locking pin which was difficult for the ROV to access.

- Cameras connected to a subsea junction box and the signal relayed to surface via and umbilical attached to the drillstring.
- Real time pictures viewed on master control unit, with facility to record and switch between camera views. Still captured from the video footage are shown over the page.



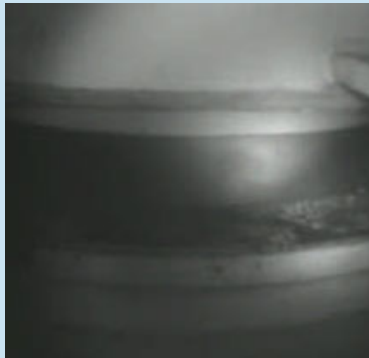
Brackets positioning the cameras  
a) Camera 4 witnessing the hydraulic locking pin and b) Camera 2 beneath the structure



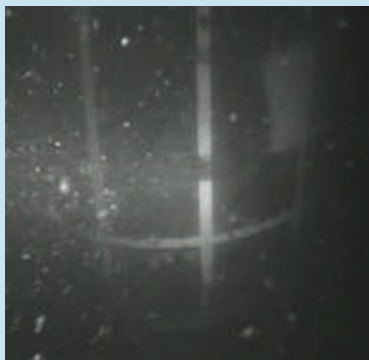
c) Surface control unit and  
d) Close up of camera and light unit

## VIDEO FOOTAGE:

Camera 3 showing the capture of the well stub by the subsea tree.



Camera 2 showing the capture of the well stub , final picture shows camera angled down



Camera 4 showing locking of subsea tree via downward movement of the indicator pin.

